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for Larry Pratt.

ADDRESS TO THE
INSTRUMENT SOCIETY OF AMERICA
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BY
HONOURABLE W. J. YURKO
MINISTER OF THE ENVIRONMENT
GOVERNMENT OF ALBERTA

JANUARY 23, 1973.

See p 6
1st 5 pages are taken from civil servants report. Then comes a key additional paragraph.

ENVIRONMENTAL PROBLEMS IN THE DEVELOPMENT OF THE FT. McMURRAY TAR SANDS

A. PREAMBLE

THE DEVELOPMENT OF THE BITUMINOUS TAR SANDS WILL UNDOUBTEDLY SHAPE THE SOCIO-ECONOMIC DESTINY OF ALBERTANS TO A FAR GREATER EXTENT DURING THE NEXT CENTURY THAN THE CONVENTIONAL CRUDE OIL DEVELOPMENTS HAVE DURING THE PAST SEVERAL DECADES.

ALBERTANS HAVE MANY OPTIONS AND STRATEGIES TO CONSIDER AND MANY DECISIONS TO MAKE.

ON ONE HAND WE CAN CONTINUE THE POLICIES OF THE CONVENTIONAL CRUDE OIL DEVELOPMENTS ... CREATING TREMENDOUS AND UNREGULATED GROWTH AND DEVELOPMENTS RESULTING IN SHORT TERM BENEFITS ACCRUING TO THE PROVINCE ... AS WELL AS LONG TERM COSTS ARISING FROM EXPORTED ENERGY .. TECHNOLOGY .. JOB OPPORTUNITIES AND ENVIRONMENTAL DAMAGES ... IN ADDITION TO THE DEPLETION OF NON-RENEWABLE RESOURCES.

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THEN ON THE OTHER HAND ... WE CAN REGULATE THE ORDERLY GROWTH AND DEVELOPMENT OF THE BITUMINOUS TAR SANDS FOR THE ULTIMATE BENEFIT OF ALBERTA AND CANADA ... IN ORDER THAT CANADIAN TECHNOLOGY WILL BE EXPANDED. ... ALBERTANS WILL FIND BENEFICIAL AND SATISFYING EMPLOYMENT WITHIN ITS DIVERSIFIED ECONOMY ... AND OUR ENVIRONMENT WILL BE PROTECTED AND ENHANCED FOR FUTURE USE.

WHEN THE MAGNITUDE OF THE AREAL .. FISCAL .. AND MANPOWER REQUIREMENTS AND ENVIRONMENTAL CONSEQUENCES ARE VISUALIZED ... IT BECOMES APPARENT THAT THE LATTER COURSE OF ACTION IS NOT ONLY THE WISE ONE BUT THE ONLY ONE.

A SINGLE PLANT OF THE SYNCRUDE TYPE IS AN ENORMOUS CHALLENGE IN ITSELF ... BUT TEN OR TWENTY SUCH PLANTS PRESENT A CHALLENGE WHICH IS PRESENTLY ALMOST BEYOND COMPREHENSION.

B. TAR SANDS DEVELOPMENT POTENTIAL MAGNITUDE

THE EVALUATED PORTION OF THE ATHABASCA DEPOSIT OCCUPIES ABOUT FIVE AND THREE QUARTER MILLION ACRES ... OR ROUGHLY ONE HUNDRED TIMES THE SURFACE AREA OF THE CITY OF EDMONTON.

THE PORTION OF THE ATHABASCA DEPOSIT AMENABLE TO SURFACE MINING IS APPROXIMATELY 430,000 ACRES ... OR ROUGHLY 7.8 TIMES THE SURFACE AREA OF THE CITY OF EDMONTON.

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THE REMAINDER OF THE RESERVES REQUIRE IN SITU EXTRACTION PROCESSES.

THE TOTAL HEAVY CRUDE HYDROCARBON IN PLACE IN THE ATHABASCA DEPOSIT IS ESTIMATED AT 626 BILLION BARRELS ... OR ABOUT ONE THIRD OF THE KNOWN WORLD PETROLEUM RESERVES.

OF THE 626 BILLION BARRELS IN PLACE ... 267 BILLION BARRELS OF UPGRADED SYNTHETIC CRUDE OIL ARE ESTIMATED TO BE RECOVERABLE.

ASSUMING AN ANNUAL PRODUCTION RATE OF ONE MILLION BARRELS PER DAY ... (EIGHT SYNCRUDE SIZED PLANTS) ... THE FOLLOWING STATISTICS AND ESTIMATES PROVIDE SOME IDEA OF THE MAGNITUDE OF SUCH A DEVELOPMENT:

+ DEPLETION OF THE RESOURCE WOULD TAKE APPROXIMATELY 734 YEARS

+ THE POPULATION INCREASE WOULD BE APPROXIMATELY 80,000

+ DIRECT CAPITAL INVESTMENT WOULD BE APPROXIMATELY SIX BILLION DOLLARS

+ DAILY WATER REQUIREMENTS - 333 CFS - NEARLY TEN PERCENT OF THE MINIMUM MONTHLY AVERAGE FLOW OF THE ATHABASCA RIVER

+ APPROXIMATELY SIX ACRES OF LAND WILL BE DISTURBED DAILY ... ON AVERAGE ... BY MINING OPERATIONS

+ UNDER THE PRESENT PROPOSALS ... OWING TO THE DELAY REQUIRED BEFORE TAILINGS PONDS CAN BE RECLAIMED ... THE DENUDED AREA MAY REACH AS HIGH AS TWENTY THOUSAND ACRES BEFORE A BALANCE BETWEEN NEWLY DISTURBED AND RECLAIMED AREAS CAN BE REACHED.

+ THE VOLUME OF WASTE BEING DISPOSED TO THE TAILINGS AREAS WILL BE IN THE ORDER OF TWO MILLION CUBIC YARDS DAILY ... OR AN AMOUNT EQUIVALENT TO ABOUT SEVENTEEN LEGISLATIVE BUILDINGS

+ THE SULPHUR EQUIVALENT OF THE SO_2 EMISSIONS WOULD APPROXIMATE 1950 LONG TONS PER DAY.

+ THE TOTAL ELEMENTAL SULPHUR PRODUCED WOULD BE 6600 LONG TONS PER DAY ... OR ABOUT HALF THE 1971 ALBERTA PRODUCTION NET.

C. PRIMARY OBJECTIVE

ALBERTA IS NOT GENERALLY UNDER ANY PRESSURE TO DEVELOP SYNTHETIC CRUDE OIL FROM THE BITUMINOUS TAR SANDS FOR THE PURPOSE OF MEETING EITHER ALBERTAN OR CANADIAN PETROLEUM REQUIREMENTS.

THE PRESSURE TO DEVELOP SYNTHETIC CRUDE FROM THE TAR SANDS EMANATES PRIMARILY FROM MARKETS EXTERNAL TO CANADA.

GIVEN THE FACT THAT THE DEVELOPMENT OF SYNTHETIC CRUDE OIL WILL BE TO MEET FOREIGN AND NOT CANADIAN PETROLEUM REQUIREMENTS ... THEN THE DEVELOPMENT OF SYNTHETIC CRUDE OIL FROM THE TAR SANDS SHOULD PROCEED ON A SCALE AND RATE OF DEVELOPMENT WHICH ENSURES THAT SUBSTANTIAL BENEFITS ACCRUE TO CANADIANS ... AND ESPECIALLY ALBERTANS ... AND AT SUCH RATE AS TO PREVENT PERMANENT AND IRREPARABLE DAMAGE TO THE PHYSICAL ENVIRONMENT.

IN FACT, THESE BENEFITS MUST OUTWEIGH ANY FUTURE COSTS ASSOCIATED WITH THE DEPLETION OF THE NON-RENEWABLE RESOURCE.

GIVEN THIS UNDERLYING PHILOSOPHY ... IT BECOMES AXIOMATIC THAT ALBERTA'S PRIMARY OBJECTIVE IS TO REGULATE .. GUIDE .. AND CONTROL THE BITUMINOUS TAR SANDS DEVELOPMENT ... IN ORDER TO MEET THE GROWING SOCIO-ECONOMIC NEEDS OF ALBERTANS AS WELL AS CANADIANS: ... INCLUDING THE LOCATION .. EXTENT .. UPGRADING .. AND PROCESSING ... AS WELL AS THE SECONDARY AND TERTIARY DEVELOPMENTS INDUCED BY ... OR STEMMING FROM THE RESOURCE DEVELOPMENT.

THE BASIC FEATURE OF THE OVERALL DEVELOPMENT MODEL SHOULD BE THAT THE SCALE OF DEVELOPMENT ... RATE OF DEVELOPMENT ... AND STAGING OF DEVELOPMENT WILL BE DICTATED BY DELIBERATE POLICY DECISIONS BY ALBERTANS DESIGNED TO ENSURE THAT THE DEVELOPMENT COMPLEMENTS AND SUPPLEMENTS THE OVERALL DEVELOPMENT REQUIREMENTS OF ALBERTANS AND CANADIANS.

THE POLICY DECISIONS WILL NO DOUBT BE GUIDED PRIMARILY BY THE PERCEIVED BENEFITS THAT WILL ACCRUE TO ALBERTANS AND CANADIANS.

ONLY AFTER ALBERTAN AND CANADIAN POLICY PARAMETERS HAVE BEEN FULFILLED SHOULD FOREIGN CONSTRAINTS BECOME OPERATIVE ON THE LONG TERM.

"HOWEVER ... ON THE SHORT TERM ... IN ORDER THAT SEVERAL PLANTS ARE BUILT AND THE PROCESSES AND ECONOMICS ARE PROVEN BEYOND DOUBT ... IT MAY BE NECESSARY TO MAKE ADJUSTMENTS IN THESE BASIC POLICIES.

SOME RELAXATION MAY BE NECESSARY."

Cabinet

D. SECONDARY OBJECTIVES AND STRATEGIES

IN ADDITION TO THIS PRIMARY OBJECTIVE ... THERE ARE NUMEROUS SECONDARY OBJECTIVES AND STRATEGIES WHICH REQUIRE CONSIDERATION IN ORDER TO DEVELOP A COMPREHENSIVE DEVELOPMENT STRATEGY FOR THE TAR SANDS.

I WILL DISCUSS ONLY ONE OF THESE LATER IN SOME DETAIL ... AND IT IS RELATED TO ENVIRONMENTAL MANAGEMENT.

E. THE ENVIRONMENTAL PROBLEMS OF TAR SANDS DEVELOPMENT

THE PROBLEMS RELATED TO TAR SANDS DEVELOPMENT ARE LEGION ... AND EMBRACE ALL ASPECTS OF THE TOTAL ECOLOGY.

A BRIEF SUMMARIZATION MAY BE ITEMIZED AS FOLLOWS:

1. AIR POLLUTION PROBLEMS ARISING FROM UNDESIRABLE EMISSIONS ... PARTICULARLY SULFUR DIOXIDES .. PARTICULATES .. AND VAPOUR CAUSING ICE FOG ... BUT NOT EXCLUDING OTHER GASEOUS AND VAPOUR COMPONENTS.

2. SURFACE WATER AND GROUND WATER POLLUTION ARISING FROM THE DISCHARGE OF CONTAMINATED WATERS ... AS WELL AS TAILINGS ... AND IN SITU INJECTIONS ... AS WELL AS SILTATION.

3. LAND RECLAMATION PROBLEMS ARISING FROM STRIPPING ... SURFACE MINING ... AND TAILINGS DEPOSITION.

4. WILD LIFE AND AQUATIC LIFE PRESERVATION PROBLEMS.

5. ALL THE NUMEROUS HUMAN HABITAT PROBLEMS ARISING FROM RAPID URBANIZATION OF THE REGION.

F. ENVIRONMENTAL OBJECTIVES AND STRATEGIES

THE OBJECTIVE WITH RESPECT TO THE NATURAL ENVIRONMENT WILL BE TO ENHANCE AND IMPROVE IT FOR SUBSEQUENT LAND USE AFTER THE EXTRACTION OF BITUMIN HAS BEEN COMPLETED.

WATER EFFLUENTS OR ATMOSPHERIC EMISSIONS WILL HAVE TO BE CONTROLLED TO THE LIMITS OF TECHNOLOGY ... IN ORDER THAT SERIOUS ENVIRONMENTAL DEGRADATION BE PREVENTED.

ALTHOUGH LAND SURFACE DISTURBANCES OF IN SITU PROCESSING AREAS WILL BE EXTENSIVE ... THE OBJECTIVE WILL BE TO MINIMIZE THE IRREPARABLE DAMAGE AND MAINTAIN THE INTEGRITY OF THE WATERSHED.

ON MINEABLE AREAS ... THE ENTIRE SURFACE WILL BE DISTURBED ... RESULTING IN EXTENSIVE SURFACE TOPOGRAPHICAL ALTERATIONS ... WITH DRASTIC CHANGES TO THE SURFACE AND SUBSURFACE HYDROLOGY.

THE OBJECTIVE ON THESE AREAS WILL BE TO RECLAIM THEM TO A SUBSEQUENT LAND USE MORE BENEFICIAL ... IF POSSIBLE ... TO SOCIETY THAN AT PRESENT.

EQUIVALENT SAFEGUARDS WILL HAVE TO APPLY TO ANCILLARY MUNICIPAL AND CORPORATE DEVELOPMENTS.

SOME OF THE WORK ACTIVITIES NECESSARY TO DEVELOP ENVIRONMENTAL STRATEGIES ARE ALREADY UNDER WAY.

THE INTEG STUDY ... WHICH WE COMMISSIONED LAST YEAR ... IS STUDYING THE EFFECTS OF EVENTUAL MULTI-PLANT OPERATIONS OVER THE EXTENT OF THE ATHABASCA TAR SANDS.

THE INTERIM REPORT IS CURRENTLY BEING REVIEWED BY THE GOVERNMENT ... AND THE FINAL REPORT SHOULD BE AVAILABLE BY THE END OF THIS MONTH.

THIS STUDY WILL GENERALLY ESTABLISH THE MAGNITUDE OF THE PROBLEMS THAT CAN BE ANTICIPATED ... AND ALSO THE RESEARCH AND DEVELOPMENT WORK THAT SHOULD BE UNDERTAKEN.

ANOTHER MAJOR ENVIRONMENTAL ACTIVITY IS THE FORT McMURRAY TOWNSITE PLANNING WHICH IS UNDER WAY.

ALTHOUGH IT IS CURRENTLY PROJECTING ONLY TO THE DEVELOPMENT OF THE SYNCRUDE PLANT ... AND THE POPULATION INCREASE CAUSED BY IT ... IT IS SUFFICIENTLY OPEN ENDED THAT AS GOVERNMENT OBJECTIVES AND POLICY TAKE SHAPE ... THE NECESSARY EXPANSIONS CAN BE PROJECTED.

IN ADDITION ... THE PLANNING OFFICE OF THE GOVERNMENT IS PROCEEDING WITH A FORT McMURRAY REGIONAL PLAN.

A THIRD ENVIRONMENTAL ACTIVITY CURRENTLY UNDER WAY IS AN ECOLOGICAL BASELINE STUDY FUNDED BY THE DEPARTMENT OF THE ENVIRONMENT ... AND BEING CARRIED OUT BY THE ALBERTA FOREST SERVICE ... THE FISH AND WILDLIFE DIVISION ... THE PARKS DIVISION ... AND THE CANADIAN WILDLIFE SERVICE.

THIS STUDY WILL PROVIDE DETAILED FOREST INVENTORY AND VEGETATION INFORMATION ON 3,096 SQUARE MILES OF LAND ... (OF WHICH APPROXIMATELY 430,000 ACRES COULD BE MINED) ... AND UNGULATE ... WATERFOWL ... SPORT FISH ... AS WELL AS OUTDOOR RECREATION CAPABILITY ON 11,340 SQUARE MILES ... AND ON THE PROPOSED FORT McMURRAY PIPELINE AND HIGHWAY CORRIDOR.

ALSO ... THE DEPARTMENT OF THE ENVIRONMENT HAS RECENTLY ADVERTISED FOR PROPOSALS WHICH WILL PERMIT STUDY OF ALL ASPECTS OF A UTILITY AND PIPELINE CORRIDOR BETWEEN FORT McMURRAY AND EDMONTON.

WE ARE ALSO ANTICIPATING AN ACCELERATED PROGRAM OF RESEARCH IN REGARD TO SURFACE RECLAMATION METHODS AND TECHNIQUES ... AND TAILINGS DISPOSAL.

IN ADDITION ... OTHER SUGGESTED ACTIVITIES ARE PLANNED ... ON WHICH WE ANTICIPATE SUSTAINED ACTION IN THE FUTURE.

1. THE DEVELOPMENT OF A SATIFACTORY TAR SAND EXPLORATION AND DEVELOPMENT CORING PROGRAM ... APPLICABLE TO THOSE LEASES SUBJECT TO OVERBURDEN LESS THAN OR EQUAL TO 120 FEET IN DEPTH ... WHICH INFORMATION WOULD BE POOLED WITH OTHER SURFACE RESOURCE INFORMATION IN ORDER TO DEVELOP A REGIONAL MINING PLAN.

2. DISCUSSIONS AND NEGOTIATIONS AMONG THE LEASEHOLDERS TO RATIONALIZE AND REDISTRIBUTE LEASES ON THE BASIS OF ORE DEPOSITS ... LOCATION TO WATER BODIES ... SURFACE RESOURCES, ETC. ... IN KEEPING WITH A REGIONAL MINING PLAN.

3. THE FILING OF DETAILED DEVELOPMENT AND RECLAMATION PLANS AS PROVIDED BY THE PROPOSED LAND SURFACE CONSERVATION ACT AND THE REGULATIONS ... IN ORDER THAT THE RECLAMATION ACTIVITY IS IN FULL SEQUENCE WITH THE MINING ACTIVITY AND THAT THE SUBSEQUENT RECLAMATION BE ENSURED BY A SECURITY DEPOSIT BASED ON THE COST OF RECLAMATION.

THIS PLAN CONTEMPLATES THE PRE-MINING CLEARING PRACTICES ... ENVIRONMENTAL FACTORS DURING MINING ... AS WELL AS SUBSEQUENT RECLAMATION AND REVEGETATION AND INCLUDES: ... THE SALVAGE OF COMMERCIAL TIMBER PRIOR TO LAND CLEARING ... THE SAVING AND STORAGE OF SUFFICIENT SURFACE ORGANIC AND MINERAL SOIL FOR SUBSEQUENT RECLAMATION ... THE DISPOSAL OF TAILING ACCORDING TO A PREDETERMINED PLAN SHOWING TOPOGRAPHY .. LOCATION .. ETC. ... THE RECLAMATION OF TAILINGS ACCORDING TO A PREDETERMINED PLAN OF VEGETATION WITHIN THREE TO FIVE YEARS AFTER MINING ... AND THE MAINTENANCE OF THE VEGETATION FOR TWO YEARS AFTER PLANTING.

IT IS ANTICIPATED THAT THE LAND SURFACE CONSERVATION ACT WILL BE PASSED DURING THE 1973 SPRING SESSION OF THE LEGISLATURE.

4. DEVELOPMENT OF AN ORDERLY SEQUENCE OF MINING COMMENCING WITH ONE DRAINAGE BASIN ... TO FULLY DETERMINE THE CONSEQUENCES OF THE MINING AND RECLAMATION BEFORE OTHER DRAINAGE BASINS ARE MINED.

5. DEVELOPMENT OF SUBSEQUENT LAND USE PLANS ... BASED ON RESEARCH WHICH WOULD INCORPORATE REFORESTATION, FORAGE PRODUCTION, WILDLIFE HABITAT, LIMITED ARABLE AGRICULTURAL AND HORTICULTURAL PRODUCTION .. OUTDOOR RECREATION DEVELOPMENTS FOR CASUAL AND COMMERCIAL PURPOSES.

6. DEVELOPMENT AND IMPLEMENTATION OF SPECIAL AIR QUALITY CONTROL TECHNOLOGY ... DESIGNED TO TAKE INTO CONSIDERATION THE MICRO CLIMATIC CONDITIONS ALONG THE ATHABASCA RIVER ... THE DENSITY OF PROJECTED PLANTS ... THE NORTHERN CLIMATE ... AND THE EXPOSURE TO A LARGE CONCENTRATION OF PEOPLE.

7. THE ZONING AND PROHIBITION OF MINING AND TAILING SANDS DISPOSALS ALONG THE ATHABASCA RIVER ... AND OTHER DESIGNATED WATERCOURSES REQUIRED TO BE MAINTAINED TO ENSURE THE INTEGRITY OF THE WATERSHED.

   WE ARE PRESENTLY GIVING SOME CONSIDERATION TO PROTECTING SOME OF THE LAKES AND THEIR SHORELINES IN THE AREA.

8. WASTE PRODUCTS FROM FORT McMURRAY SHOULD BE INCORPORATED IN THE RECLAMATION PLANS OF ADJACENT MINING OPERATIONS.

9. PIPELINE CORRIDORS SHOULD BE DEVELOPED IN ORDER TO MINIMIZE THE AMOUNT OF LAND REQUIRED ... AND ALSO TO ENSURE EASIER MONITORING AGAINST SPILLS.

   AS I INDICATED ... WE ALREADY HAVE ADVERTISED FOR SUCH A STUDY.

10. THE LONG TERM USE OF THE MINED AND RECLAIMED LAND COULD BE TO SUPPORT A TIMBER OR PULP AND PAPER INDUSTRY.

11. UNDERTAKE A RESEARCH PROGRAM TO DETERMINE THE APPROPRIATE SURFACE WATER AND GROUNDWATER CHARACTERISTICS AND SEDIMENTATION STUDIES WITHIN THE ATHABASCA RIVER ... AND OTHER STREAMS DRAINING MINED AREAS.

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